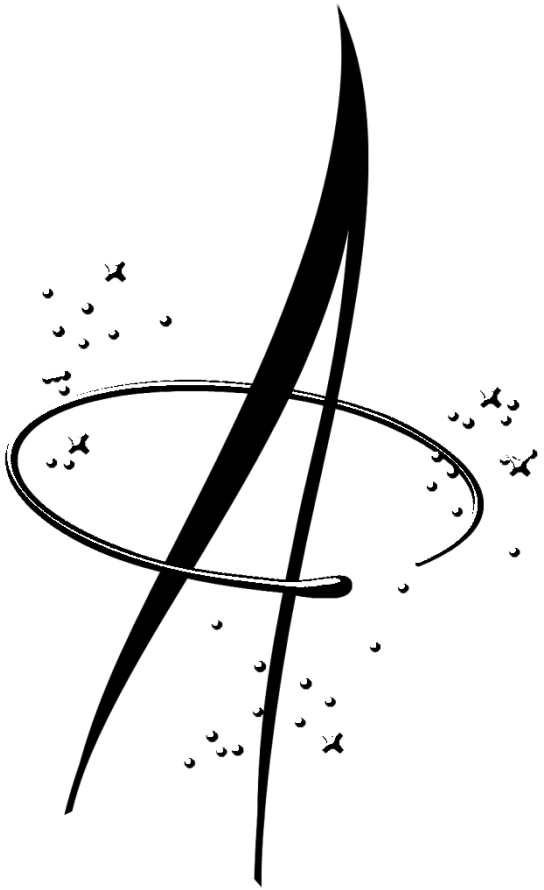
National Aeronautics and Space Administration

NASA ACADEMY AT MARSHALL SPACE FLIGHT CENTER



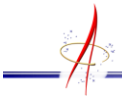
PROFILE BOOK 2012

"This is NASA's vision for the future. Our mandate is:

- To improve life here,
- To extend life to there,
- To find life beyond

So, how do we get to that impressive picture of the future? Part of the answer is by executing NASA's mission:

- ***To understand and protect our home planet***
- ***To explore the Universe and search for life***
- ***To inspire the next generation of explorers***
  … as only NASA can."



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Program Description

The NASA Academy is an intensive resident summer program of higher learning for college undergraduate and graduate students interested in pursuing professional and leadership careers in space-related fields.

The NASA Academy program is designed to present a comprehensive package of information and experiences about the organization of the NASA agency, some of its most important current and planned science, engineering, education, and technology enterprises, as well as a number of non-technical areas of critical significance, such as management, budgeting, safety, personnel and career development, leadership, space law, international cooperation, etc. Besides attending lectures and workshops, students are involved in supervised research in MSFC laboratories, and participate in visits to other NASA Centers and facilities and a number of space-related academic laboratories and industries.

Eligibility, Selection Criteria, and Placement

The participants in the Marshall NASA Academy have been selected based following criteria:

- academic rank (junior, senior, first, or second year graduate)
- academic performance (GPA higher than 3.0 or equivalent)
- demonstrated interest in the space program
- demonstrated leadership qualities
- research and/or project interest and experience
- maturity
- recommendation and references
- citizenship or permanent residence is required for US applicants

Both the selection process and placement of the Academy participants in Marshall's research groups were assisted by recommendations from faculty, administrators, academic supervisors, and co-workers, and the applicants' self-profiling essays.

A Brief History of the NASA Academy

The NASA Academy was founded in 1993 (as the "NASA Space Academy") at the Goddard Space Flight Center by Gerald (Jerry) Soffen, former Mars Viking project scientist, architect of the NASA Astrobiology program, and first Director of the Goddard Office of University Programs. Jerry was an accomplished scientist and a dedicated educator. He took advantage of the unusual opportunities presented to him during his career and realized the importance of mentoring in the life of young professionals. In his vision, the Academy was intended to exceed in purpose and content all the other regular internships by familiarizing its participants with as many facets of the NASA agency as possible. With his dynamic personality and unique leadership, he opened many gateways and defined a new standard of excellence.

As the reputation of the Goddard Academy widened, new NASA Academy Programs were started at the Marshall Space Flight Center (1994), the Ames Research Center (1997), and the Dryden Flight Research Center (1997). In 2005 Goddard, Glenn, and Marshall will host their own Academy.

The name of the program changed from "NASA Space Academy" to "NASA Academy" at specific NASA Centers. A continuous effort is being made to establish or re-establish Academies at various NASA Centers, with different profiles and focus areas.

Jerry Soffen died on November 22, 2000. We honor his legacy by continuing the Academy program that he loved so well.

In 2012, the NASA Academy celebrated twenty years of successful activity. So far, more than 700 students have graduated from the program, both domestic and international students.

North Carolina State University
Raleigh, North Carolina
Mechanical Engineering
Bachelors of Science, May 2012
E-mail: srbohon@gmail.com

NASA Academy Research Project:

"Development of an Active Alignment System for the High Energy Replicated Optics Scientific balloon Payload"
Principal Investigator: Jessica Gaskin

Research and Experience

- **Engineering Intern,** Gilbarco Veeder-Root (Summer 2010,2011)
  - Developed cold weather product solutions and field-retrofit prototypes
  - Researched and brainstormed products for emerging markets
  - Collaborated with Indian partners in the building and testing of prototype units for a new line
  - Participated in brainstorming, progress reports, product review meetings, and exiting report presentations for management
  - Saw projects from concept through to completion
- **Landscaping Contractor,** FNW Investments (2009)
  - Determined necessary materials and labor
  - Independently managed small to medium scale landscaping projects to completion
- **Landscaper,** B.B. Landscaping & Design (2007)
  - Prepared and submitted landscaping design proposals to customers
  - Developed time and resource management skills

Honors and Activities

- Pi Tau Sigma International Mechanical Engineering Honor Society
- University Honors Program NCSU 2008-2012
- Recipient of the Engineering Foundation Merit Scholarship entailing a four year scholarship awarded based on scholarship and academics
- Eagle Scout in the Boy Scouts of America
- Publications in the 2009 NCSU First-Year Writing Student Anthologies
- Dean's List 2008-2012

Skills

- Microsoft Office Excel, Word, PowerPoint and Outlook
- SolidWorks & ProE
- MATLAB & Simulink

- Welding – MIG, TIG, and Stick Welding
- FORTRAN computing language

Personal Statement

Steven Bohon spent a majority of his youth in High Point, North Carolina and currently lives in Raleigh, North Carolina where he attends North Carolina State University. He is interested in the thermal sciences, especially combustion, and will begin pursuing a Master's degree from NCSU this coming fall. He has enjoyed his undergraduate career and has had hands on experiences with prototyping, PID and lead-lag controller development, CAD modeling, and fluid system development.

Outside of class, Steven enjoys playing the guitar and mandolin, brewing beer, and playing ultimate Frisbee. He has many personal projects that he is constantly growing and developing as his engineering experiences increase like an automated and temperature regulated home brewing system. Steven is excited about this summer opportunity with NASA and feels that he will gain much experience in the laboratory and with leadership skills. He looks forward to the lectures, Q&A's, and company trips that the Academy will be hosting throughout the summer.

James Madison University
Harrisonburg, Virginia
Mathematics and Physics with a
Multidisciplinary Concentration in
Technical and Scientific Communication
Bachelors of Science, May 2014
E-mail: carnelka@dukes.jmu.edu

NASA Academy Research Project:

"Resonances and Anti-Nuclei Cross-Sections in Space"
Principal Investigator: Nasser Barghouty

Research and Experience

- **Research Assistant,** Crossroads to Brain Injury Recovery, Inc. (2010)
  - Searched for and summarized articles relating to various concentrations of brain injury in society. (Mentor: Elizabeth Lincoln)
- **Research Assistant,** James Madison University Astrophysics Lab (2011)
  - Learned about and classified galaxies. (Mentor: Anca Constantin)

Honors and Activities

- Dean's List (Fall 2010, Fall 2011)
- Mathematics Major Scholarship (2010-2014)
- Volunteer for Crossroads to Brain Injury Recovery, Inc. (2010-Present)
- Speaker for the James Madison University "CHOICES" Program on STEM majors

Skills

- Experience in computer programming using different languages including MATLAB and C
- Strong Communication Skills

Hobbies and Interests

- Reading and Writing
- Art and Design
- Exercising

Personal Statement

Curiosity drives my academic pursuits and career goals. I grew up in a household that taught me to always ask questions and listen carefully to the answers. Both my parents have their medical degrees and my older sister is currently in medical school; however, I have never wanted to be a doctor. My father, being an endocrinologist, can answer any of my questions regarding the human body, and my mother, being a psychiatrist, can answer any of my questions regarding the

human mind. I have taken it upon myself to find answers to questions involving the way logic and the world work through the study of mathematics, my calling, and physics, a new interest. I have delved into these subjects whole-heartedly and wonder how I will find a career that fits me. Already in the process, my plan is to experience as many different applications of math and physics as I can. I hope to figure out what exactly I want to do after the next two years whether it be the start of my career or graduate study so that eventually my job fits my lifestyle—where I want to ask questions and discover new answers every day.

Texas A&M University-Commerce
Commerce, Texas
Dual Math and Physics with minor in Astronomy
Bachelors of Science, May 2013
E-mail: andrewdahir@hotmail.com

NASA Academy Research Project:

"Metrology of X-ray Optics for Astrophysical Applications"
Principal Investigator: Misha Gubarev

Research and Experience

- **Honors Undergraduate Thesis,** Texas A&M University-Commerce (Jan 2010-Current)
  - "Interstellar Navigation By Pulsars"
  - Research and develop methodology and equations for using pulsars to navigate and locate a spacecraft in the universe
- **Assistant, Planetarium at Texas A&M University-Commerce,** Commerce, TX (Mar 2012-Current)
  - Present and operate planetarium shows
  - Assist in operations and research at the Texas A&M University-Commerce Observatory
  - Assist in day to day activities
- **Assistant Manager and Stand-In General Manager at Dominos Pizza,** TX (Feb 2010-Current)
  - Fill in at any store where there is no General Manager or the General Manager is on vacation
  - Oversee day to day activities
- **PC Technician,** Wylie ISD and Texas A&M University-Commerce (Apr 2006-Sept 2009)
  - Troubleshoot and repair damaged computers
  - Develop and Implement new processes and software.

Honors and Activities

- Society of Physics Student (SPS), Aug 2011 – Current, Member
- The Climbing Society at Texas A&M University-Commerce Mar 2012-Current
  - Founder
  - President, Mar 2012-Current
  - Assistant Coach, Mar 2012-Current
  - Competitive Team Member
- Honors Program at Texas A&M University-Commerce, Member

- Dean's list For college of Science Engineering and Agriculture (Jan 2011 - Dec 2011)
- Manager in Training MVP for CSPH Franchise of Dominos Pizza for 3 periods
- Above and Beyond the Call of Duty award for CSPH Franchise of Dominos Pizza

Skills

- Digistar 3 Planetarium Systems
- Strong management and leadership skills
- Extensive use of Microsoft Word, Excel and PowerPoint
- C++
- Proficient in Microsoft Operating Systems

Hobbies and Interests

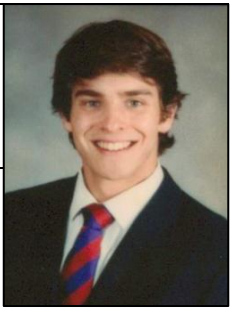
I take pleasure in rock climbing both indoors and outdoors and compete at the newly formed rock climbing team at Texas A&M University-Commerce. I enjoy working out, tennis, ultimate Frisbee, wave boarding, board games, reading fiction, fantasy and sic-fi, going camping, gaming, watching sci-fi and fantasy movies, and gaming. I have some of the best friends in the world and love getting to spend time with them. I am always willing to try new things and I am not afraid of an adventure.

Personal Statement

Throughout any student's college journey, their goals and aspirations are bound to change. As I travel through my own college career my goals have only become stronger and more ambitious. The more I study Math, Physics and Astronomy, the more my passion grows and thrives with my goals for the future being as high as they could possibly be. My ultimate goal would be able to become an astronaut and be able to do research in space.

During my college years I have become exposed to the theoretical and research side of Physics and Astronomy and it is the best part about being in college. The more I learn about space and the universe around us, the more convinced I am that that is the career path for me. My passion to explore the universe and the mysteries that is holds is the driving force behind my ultimate goal of obtaining my doctorate and becoming an astronaut. While I am still in pursuit of my undergraduate degrees, I have been working on an honors thesis studying navigation possibilities using pulsars. This research has been a great opportunity for me to make sure that this is what I want to end up doing for the rest of my life, and so far, I can't imagine having a better career. The field to become an astronaut is an extremely competitive one and the best way to be successful is to gain as much knowledge as possible in the most diverse ways. I plan on going to graduate school and completing a doctorate in either Astrophysics or Aerospace Engineering. Words cannot express how grateful I am for the opportunity to spend a whole summer at NASA and gain the experience of a lifetime.

Drexel University
Philadelphia, PA
Mechanical Engineering
Bachelors of Science, June 2014
E-mail: mmd79@drexel.edu



NASA Academy Research Project:

"Developing the Payload for the Entry in Lunar X-Prize Competition"
Principal Investigator: Marty Kress

Research and Experience

- **CDI-Aerospace,** *Mechanical Drafter,* Philadelphia, PA
  (April 2012 – May 2012)
  - Trained in the use of CATIA V5 for design support of Boeing 787
  - Comprised commodity reports for airframe structures
  - Delivered dimensional analysis fuselage and stringer sections
- **NASA – Reduced Gravity Student Flight Opportunities Program,** *Structures Design and Team Logistics Coordinator,* Houston, TX
  (March 2011- Sept. 2011)
  - Research group awarded grant to fly student-designed experiment on NASA's Weightless Wonder
  - Contributed to proposal, design, and fabrication of test equipment
  - Analyzed structural integrity for worst-case conditions
  - Communicated project details to journalists and airport security
  - Presented, in a Test Readiness Review, to NASA Safety Committee
  - Successfully conducted zero-gravity experiment with autonomous safety measures
- **E. I. DuPont de Nemours & Co,** *Engineering Technician ,* Chambers Works – Deepwater, NJ (April 2011 - Sept 2011)
  - Collaborated with both technical and operations staff for an Aramid Intermediates Process
  - Participated in training programs involving: incident investigations, process safety and risk management, safety initiatives, process and instrument diagrams, federal and state regulations
  - Contributed to inventory project of all process safety-critical equipment
  - Led meetings pertaining to driving safety and project efforts
  - Trained and acclimated new employees to the process environment
  - Aided in attaining a more process-friendly operating permit; prevented two deviations in three weeks thereafter
  - Delivered a presentation of end-of-tour results to multiple plant officials

Honors and Activities

- Dean's Scholarship: Drexel University, 2009-Present
- Edward J. Bloustein Distinguished Scholar: State of New Jersey, 2009
- Balanced Man Scholarship: Sigma Phi Epsilon Fraternity, PA Beta Beta, 2009
- American Legion Post 372
  - Scholastic Excellence Award, 2009
  - General Military Excellence Award, 2008
- Drexel Amateur Radio Club – W3MGF; Founder and President, 2011-Present
- Drexel Space Systems Lab; Member – Plan, troubleshoot, and design Drexel's first Pico-satellite, 2009-Present
- American Society of Mechanical Engineers; Member, 2010-Present
- Sigma Phi Epsilon Fraternity, PA Beta Beta; Member, 2009-Present

Skills

- Computer Skills – CATIA V5; Visio; AspenTech Process Explorer; SAP; ManageIT Central; The Learning Manager; Maple; MATLAB; LabVIEW; Pro/ENGINEER; AutoCAD; Microsoft Office Suite; Adobe Premiere
- FCC Amateur Radio Certified – Technician, KC2ZCI

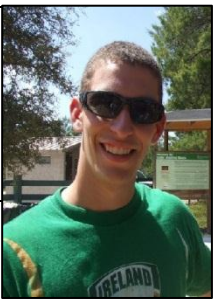
Hobbies and Interests

My goal is to strike a balance between work, play, physical activity, and cultural exposure. I like biking, hiking, skiing, golf, and soccer. I also like to work out and travel. I enjoy a good movie or concert and recently took up guitar and play for a local church. I like foods from foreign cultures and enjoy having new experiences.

Personal Statement

I grew up between Stratford and Cherry Hill, New Jersey. Through the years, my grandfather always had neat stories to tell about his career as an electrical engineer. He often shared some great stories of Apollo and Viking. Ever since, I have had a passion for anything relating to space exploration, and this has led me to pursue a technical degree. Between meeting an astronaut, and having a high school instructor who was passionate about space, I knew I wanted to be involved in the space industry. Having begun my undergraduate education at Drexel University, I immediately got involved in Greek life and the newly formed Space Systems Lab. I chose to study mechanical engineering with the ultimate goal of specializing in an aerospace field. I was fortunate to have some great experiences as a new student orientation leader, and then a technician at a local DuPont plant. Throughout the last two academic years, I coordinated the revival of the university's amateur radio club. My most fulfilling experience happened last summer; my research team experienced weightlessness aboard the Weightless Wonder. This amazing experience left me with an even more insatiable hunger to get involved in the space industry. I am truly excited to a part of the 2012 MSFC NASA Academy and I look forward to learning a lot from, and contributing to, this awesome experience.

Embry Riddle Aeronautical University
Daytona Beach, Florida
Aerospace Engineering (Astronautics),
Space Studies Minor
Bachelors of Science, May 2015
E-mail: fordj9@my.erau.edu



NASA Academy Research Project:

"Nano Launch Vehicle Design"
Principal Investigator: Jason Campbell and Mike Kovach

Research and Experience

- **Air Force ROTC – Detachment 157,** Daytona Beach, FL (Fall 2010-Fall2011)
  - *Ability Group Leader*, Spring 2011 - Lead and maintain the discipline of cadets in Physical Training workouts
  - *Public Relations*, Fall 2011 - Set recruitment dates with local high schools and organized community service projects
  - *AEF Briefing*, Fall 2011 - Led the wing in AEF Briefing and simulations
- **Strike Eagle Squadron,** *Organization Member,* Daytona Beach, FL (Fall 2010 – Spring 2012)
  - *Staff Treasurer*, Officer Position Spring 2012
- **Phi Gamma Delta International Fraternity,** *ERAU Delta Colony,* Daytona Beach, FL (Spring 2012)
  - *Founding Father – Scholarship Committee Spring 2012*
- **Subway – General Employee,** Springfield, MO (June 2011-Jan. 2012)
  - Assisted management for overall operation of store
  - Worked the cash register and handled transactions

Honors and Activities

- Eagle Scout Award
- AFROTC – Fall 2010 – Fall 2011
  - Commendation Award – Fall 2010
  - Ability Group Leader – Spring 2011
- Strike Eagle Squadron, Basic SERE Training Organization – Fall 2010 – Present
  - Prior Status Member – Spring 2011 – Fall 2011
  - Treasurer Officer Staff Member – Spring 2012
- Emerging Leaders Program – Spring 2011
- Phi Gamma Delta – International Fraternity – Spring 2012 – Present
  - Colony Founding Father
  - Scholarship Committee – Spring 2012 – Present

Skills

- Computer/Programing – CATIA, MATLAB, Microsoft Office Programs
- Other – Eagle Scout

Hobbies and Interests

I like to stay active. I partake in running, working out, occasionally rock climb, and surfing. I like boxing and would like to get the time to get a membership to a gym where I can actually learn how instead of sparring with friends in the backyard. I am a music fanatic and play both guitar and bass guitar. I am a thrill seeker but thankfully can make controlled decisions. I consider myself a space nut and will try my hardest to achieve my goal of becoming an astronaut.

Personal Statement

I took interest of math and science at an early age and never deferred from that field. I became interested in space during middle school and since then knew I would be involved in the space industry. I took a strong fascination with engineering in high school and worked hard to be able to get to college. I got accepted to Embry-Riddle Aeronautical University as an Aerospace Engineer with a concentration in Astronautics on an Air Force scholarship and the Embry-Riddle Scholars scholarship.

I have strongly finished my second year at the university and am motivated to continue my performance level and even go beyond. I have become active in the campus community and demonstrate great leadership ability and potential. I was accepted into the NASA Academy Program after two years of schooling and hope to enter more research projects in my academic future. Upon completing my undergraduate studies I plan to continue into the graduate level to receive a Master's degree.

Williams College
Williamstown, Massachusetts
Astrophysics
Bachelors of Arts, May 2012
E-mail: mwhosek@gmail.com

NASA Academy Research Project:

"Measurement of the Dust Production of Active Comets and Meteor Shower Parents"
Principal Investigator: Bill Cooke

Research and Experience

- **Honors Thesis in Astrophysics,** Williams College (2012)
  - Advisor: Professor Karen Kwitter, Williams College
  - Analysis of 123 spatially-resolved IFU spectra of the Eskimo Nebula to examine nebular properties
- **Research Assistant,** Williams College (Summer 2011)
  - Advisor: Professor Karen Kwitter, Williams College
  - Analyzed spectra of 16 planetary nebulae in M31 to model properties of central white dwarf stars
- **Independent Study in Astronomy Research,** Williams College (Jan. 2011)
  - Advisor: Dr. Steven Souza, Williams College
  - Designed three independent procedures for image reduction and analysis for photometry-based research of Be-class stars
- **NASA Marshall Space Flight Center Summer Intern** (Summer 2010)
  - Advisors: Dr. William Cooke and Dr. Robert Suggs, Meteoroid Environment Office
  - Developed observing and image processing procedures for photometry of asteroids and comets
- **Keck Northeast Astronomy Consortium REU,** Wellesley College (2009)
  - Advisor: Dr. Stephen M. Slivan, Wellesley College
  - Measured 2009 lightcurve of asteroid (761) Brendelia, determined sidereal rotational period using several previous lightcurves

Publications and Presentations

Hosek, M. (2012). "Integral-field Spectroscopy of NGC 2392: The Eskimo Nebula". Undergraduate Thesis Defense at Williams College, Williamstown, MA.

Souza, S.P, Boettcher, E., Wilson, S., Hosek, M. (2011). "H-alpha Monitoring of Early-Type Emission Line Stars". Poster presentation at the 218th AAS Meeting, Boston, MA.

Hosek, M., Cooke, W.J., Suggs, R.M. (2011). "Lightcurve Analysis of Asteroids 664 Judith and (20453) 1999 KL6". The Minor Planet Bulletin, Vol. 38, No. 1, pp. 11-12.

Hosek, M, King, A., Sady, A. (2011). "Photoionization Models of Planetary Nebulae in M31". Keck Northeast Astronomy Consortium: Proceedings of the 2011 Undergraduate Symposium on Research in Astronomy, pp. 33-38.

Hosek, M. (2010). "Building a Data Pipeline: Image Analysis of Asteroids and Comets". Poster presentation at the 2010 Summer Research Poster Session, NASA Marshall Space Flight Center, Huntsville, AL.

Hosek, M. (2009). "The Lightcurve and Sidereal Period of Asteroid (761) Brendelia". Keck Northeast Astronomy Consortium: Proceedings of the 2009 Undergraduate Symposium on Research in Astronomy, pp. 12-15.

Honors and Activities

- Williams College Marching Band, 2008-2012
  - Band Leader, 2010-2012
- Williams Outing Club
  - Freshman Orientation Backpacking Trip Leader, 2009
  - Freshman Orientation Trip Leader Instructor, 2010
- Boy Scouts of America 2001-2008
  - Eagle Scout Rank, 2008
  - Junior Assistant Scoutmaster, 2006-2008
- Sigma Xi Associate Membership, 2012
- AP Scholar with Distinction, 2007, 2008
- Dudley Observatory Scholarship to Alfred University Inst. in Astronomy, 2006

Skills

- IRAF, LaTeX, Mathematica, MPO Canopus, ACP Astronomy, Astrometrica
- I am familiar with Windows, Mac, and Linux operating systems. I am experienced with UNIX, with knowledge of UNIX scripting tools including SED

Personal Statement

My interest in astronomy began in elementary school, when I was introduced to the wonders of the universe through the majestic images returned by the Voyager space probes. Since then, the goal of becoming a professional astronomer has been the motivating force behind my studies. I recently graduated from Williams College with a BA degree with honors in astrophysics and will be attending the University of Hawaii Institute for Astronomy to pursue a Ph.D. in astronomy this fall. My previous research has focused on asteroid/comet photometry and spectroscopy of planetary nebulae. Through these experiences I have learned that my passion in astronomy lies in obtaining and analyzing observations. I have discovered an interest in astronomy outreach and education as well, having thoroughly enjoyed working as a teaching assistant at the observatory and planetarium at Williams College. I am excited to once again conduct research with Dr. Bill Cooke and Dr. Robert Suggs, and to investigate career opportunities within NASA.

College of Charleston
Charleston, South Carolina
Chemistry major, Physics minor
Bachelors of Science, May 2013
E-mail: mliannan@g.cofc.edu

NASA Academy Research Project:

"Analysis of Catalyst Fouling for Life Support Systems"
Principal Investigator: Morgan Abney

Research and Experience

- **NASA Space Mission Design Project,** College of Charleston (August 2011 - May 2012)
  - In this interdisciplinary project, a geology major, a computer science major, and I designed a science mission for a hypothetical Mercury lander. We collaborated with engineering students at the University of Alabama Huntsville and competed against other teams in our class.
- **Cancer Vaccine Lab,** The Medical University of South Carolina (June 2011 - August 2011)
  - Aided the lab as a summer intern, helping them perform experiments and eventually conducting projects of my own. I also redesigned our mouse inventory, attended joint lab meetings, and presented results to my peers.
- **McAlister's Deli of North Charleston,** (Aug. 2009 - May 2012), *Server and Cashier*
- **Moranz Entertainment**, LLC (December 2007 - Present), *Seasonal usher for theatrical shows*

Honors and Activities

- American Chemical Society (2011 - now)
- 2nd Honorable Mention at the Clemson Biology Merit Exam (2009)
- Palmetto Fellows Scholar (2009 - now)
- College of Charleston's Presidential scholar (2009 - now)
- Campus TV; recruited and managed a crew of 12+ people to produce a series (2010)
- FIRST Robotics and BAE Systems; mentor for the Hanahan High FIRST Robotics team (2009-2010)
- Charleston Animal Society; animal handling and event assistance (2009-now)
- North Charleston Cultural Arts Department; assisting with North Charleston Arts Festival (2003-now)
- ConCarolinas; assistant art room director (2005-now)

- Charleston Exchange Club; food booth assistant at the Coastal Carolina Fair (2003-now)
- Reed Exhibitions and Lucasfilm; elite squad volunteer at Star Wars Celebration V (August 2010)

Skills
Microsoft Word/Excel/PowerPoint, Adobe Photoshop/After Effects/Premiere CS4, ChemBioDraw Ultra, Sony Vegas, HTML, and hands-on experience with GC-MS, LC, UV/Vis spectrometer, FT-IR, atomic emission spectrometer, x-ray fluorometer, luminescence spectrometer, cell sorting flow cytometer, lab mice, and bomb calorimeter.

Hobbies and Interests
Film-making, writing, graphic arts, board games, volunteering with my mother at science fiction conventions, helping animals, art history, bowling, going to the water park, and playing trivia.

Personal Statement
My parents raised me with an appreciation for space. The book Dad taught me to read with was a textbook on the history of space flight! While my passive interest in the stars has stuck with me all my life, I never thought I could follow that interest after choosing chemistry as my career path. My understanding of chemistry as a high school student was limited to mixing chemicals in a flask, and that didn't seem very relatable to NASA's goals.

But this year, with my involvement in a NASA mission design course, my eyes have been opened to how relevant chemistry and instrumental analysis is to space exploration. Most importantly, it's the first time in college where I've been struck by something that I could truly spend the rest of my life doing. I have no intentions to be an academic. I desire to be a working industrial scientist - inventing, revolutionizing, and helping to shape the future. NASA offers opportunities to perform extraordinary science, and I'm thrilled to be a part of that through NASA Academy. My project is in the Life Support Systems department, and I'm excited to see how chemistry can be applied to sustaining the health of our astronauts. After I graduate next year, I plan on immediately starting a career in chemistry or chemical engineering, and would be honored to begin that career at a NASA science center.

Columbia University
New York, New York
Materials Science and Engineering
Bachelors of Science, May 2013
E-mail: jpk2130@columbia.edu

NASA Academy Research Project:

"New Materials for Space Exploration"
Principal Investigator: Tina Malone

Research and Experience

- **Research with Professor Sui-Wai Chan,** Columbia University (Jan. 2011-Present)
  - Applications of Nano Cerium Oxide in converting H2O into H2 at low temps.
  - Troubleshoot experiment apparatus and design. (component parts: TCD, desicant chamber, programmable furnace)
  - Run experiment, Collect data, and Present findings to team weekly on progress of experiment towards publication.
- **AIAA "Design, Build, Fly" competition** (Fall 2011-Present)
  - Fuselage team, Designed storage tank for 2 gallons of water with an accompanying hatch for mid-flight release.
  - Specialized in materials design choices, collaborated to produce accurate ProE models of design prototype.
  - Co-authored design specification report.
- **Intern at AIC Education,** Nanjing, Shanghai China (Summer 2010)
  - Presenter for a seminar on American Innovation in Engineering at DongNan University in Nanjing.
  - Exposure to an internationally diverse team and collaboration environment.
  - Mentored High School students on academic and extra-curricular progress, Consulted on college application strategies.
  - Researched engineering and art-related summer opportunities for high school students in China. Report published.
  - Supervised high school interns for Chinese start-up company, HYism.
- **Entrepreneur: Tampa Satellite Violin Shop,** Sponsored by Gainesville Violins (2006-2009)
  - Generated revenue for Gainesville Violins of $65,000 through the sale and rental of over 150 violins, violas, and cellos.
  - Trusted by Gainesville Violins to independently manage an inventory that often exceeded $100,000.

- Woodworking in luthier shop: carved violin bridges, pegs, sound posts, and set up instruments for ideal acoustics.
- Established relationships with customers ranging from professionals to conductors, violin instructors, and parents of students.

Honors and Activities

- Dean's List (Fall 2009 – Spring 2012)
- Edwin and Elizabeth Bright Engineering Scholar 2010-2012
- Chinese Bridge Speech Competition (April 2011) – 2nd Place in Northeast US, Intermediate division
- Beijing Summer inter-program Speech Competition 2011 – 2nd Place, Advanced Division

Skills

- Private Pilots license (in progress): First-hand understanding of in-flight aerodynamics and aircraft maneuverability.
- *Computer*: MATLAB, Java, Pro Engineering, CAD, Maya, some Python.
- *Language*: Mandarin Chinese
- *Materials Testing Equipment*: X-Ray Diffraction, Thermal Conductivity Detector, Transmission Electron Microscope, Scanning Electron Microscope, Thermogravimetric Analysis, Liquid Hydrogen Environment, Cryogenics, machining, welding, soldering, woodworking.

Hobbies and Interests

Outside of studying Materials Engineering I have become proficient at Mandarin Chinese, play the violin, and am currently working towards a private pilot's license. I also enjoy building things, exploring the outdoors, and experiencing new cultures. My interests are broad, and while I do hope that they will someday converge into a cohesive and useful set of skills, for now I am content in that there is so much that is interesting, exciting, and fun to explore.

Personal Statement

Much of my childhood was spent building towers twice my height with blocks, legos, and K'Nex. Combining this obsession in anything tall and grandiose with a love of exploration, I decided at an early age to someday "build a giant city on Mars." Despite incessant attacks by the pragmatisms of "real life," my childhood dreams of interplanetary exploration and expansion have remained obstinately intact. This interest brought me Columbia University to study Materials Science & Engineering. As a field of study, Materials Engineering sits between groundbreaking research of new materials and industrial application to create or improve upon tangible products. It is the perfect springboard for entry into the space sciences and engineering – a field that is in constant demand of higher performing materials with clearly defined functionalities. I hope to some day work on finding new solutions to current and future challenges in space technology, and am particularly interested in joining commercialized space industry.

American Public University
Charles Town, West Virginia
Space Studies
Bachelors of Science, May 2013
E-mail: andreea.mosila@mycampus.apus.edu

NASA Academy Research Project:

"Aurora of Ganymede"
Principal Investigator: Melissa McGrath

Research and Experience

- **Dharma Publishing,** *Administrative Assistant,* Cazadero, CA (2006-2011)
  - International event organizer and office management assistance
  - Basic accounting, AP/AR, invoicing
  - Graphic Design using Adobe Photoshop, Adobe InDesign, etc.
  - Video editing using Adobe Premiere, Adobe Encore, etc.
- **Staples,** *Cashier/Electronics department sales,* Columbia, SC (2006)
  - Accurately and efficiently ring on registers and maintain all cash and media at the registers.
  - Present and sell company products and services to current and potential clients
  - Responsible for displaying the items, handling returns and operating the cash register.
- **AMSI Business Consultancy & Electronics,** *Assistant Manager,* Manama, Bahrain (2000-2005)
  - Office management assistance
  - Guide and look after the efficiency of the team members
  - Creating work schedules, serving customers, completing sales transactions, bookkeeping
- **Siag Travel,** *Tour Operator,* Cairo, Egypt (1999-2000)
  - Specific responsibilities, directly involved in organizing conference, festivals, business meeting
  - Extensive experience in handling a high volume of international tourists.
  - Exposed to people and countries from all over the world.
- **Researcher,** American Public University
  - Cosmology – dark energy
  - Biology – ecological balance and changing patterns of climate worldwide; organ transplants.
  - Human Anatomy and Physiology – Alzheimer's disease
  - Anthropology – evolution and the human genome

- Space Studies – the search for life in the solar system: research on the origins of life on Earth, and life possibilities on Mars, Europa, Titan and Enceladus.
- Space Flight – contributions of robotic missions to the search for life in the solar system: research on data from: Mariner 4, Mars Viking landers, Mars Reconnaissance Orbiter, Rovers Spirit and Opportunity, Galileo, and Cassini-Huygens.
- Comets, Asteroids, and Meteorites – comets and the origin of life.

Honors and Activities

- Four times awarded a place on the Dean's Honor List at APU for the academic achievements, integrity, and commitment displayed.
- Placed twice on the President's Honor List at American Public University (APU), for the third and fourth quarter of 2011 for maintaining a cumulative grade point average of 4.0.
- Member of the Delta Epsilon Tau (DET) National Honor Society.
- Nominated to be included in the 2012 edition of Who's Who Among Students in American Universities and Colleges.
- American Public University Ambassador.

Skills

- Microsoft Office: Word, Excel, Power Point
- Adobe Creative Suite 1, 2, 4, 5 and 5.5: Acrobat XPro, Photoshop, InDesign, Premier Pro, Encore, Soundbooth
- Camtasia Video, Acumen Accounting
- Trilingual: English, Italian and Romanian. Basic conversation level in French.

Hobbies and Interests

Space exploration, scientific research, astrobiology, neuroscience, graphic design.

Personal Statement

When I emigrated from Romania to the US in 2005 I did not know what a huge opportunity will be waiting for me. I have always been fascinated with space exploration, but since in Romania there are no ways to study this field, I did not pursue my interest until 2010 when I came across the Bachelors of Science in Space Studies offered by the American Public University. I immediately joined the program and have been studying intensely and passionately ever since. The courses I have been taking allowed me to research on astrobiology and planetary science topics, such as the origin of life in the solar system, contributions of the robotic missions to the search for life, and comets and the origin of life. I have reckoned that an internship in this field would be of major importance for my future career. I plan to continue my education with a Master's of Science in planetary science, and eventually obtain a PhD in astrobiology. I am a firm believer that life is out there in the solar system, and I hope to bring my contribution to finding it in the future.

West Virginia University
Morgantown, West Virginia
Mechanical and Aerospace Engineering
Bachelors of Science, May 2013
E-mail: asquires@mix.wvu.edu

NASA Academy Research Project:

"Developing the Payload for the Entry in Lunar X-Prize Competition"
Principal Investigator: Marty Kress

Research and Experience

- **Undergraduate Student Research Program,** NASA Marshall Space Flight Center, Huntsville, AL (Fall 2009)
  - ARES I Upper Stage Ascent Timeline Generation
  - ARES I Wikis
  - Design and Analysis Cycle for ARES I
  - ARES I Abort Sequence
- **Microgravity Research,** West Virginia University (Summer 2008)
  - Magnetic Rotating Fluidized Bed and Electrostatically Enhanced Fluidized Bed in Microgravity performed through NASA's Reduced Gravity Flight Research Program at Johnson Space Center.
  - Both Experiments were accepted and performed.
  - Team Lead for 2011-2012 year.

Honors and Activities

- Microgravity research team lead
- Ultra-marathon running

Skills

- Microsoft Office programs including experience with visual basic
- MATLAB and Simulink
- ProEngineer CAD software
- ANSYS
- STK

Hobbies and Interests

- Anything space related
- Running and swimming
- Technology
- Traveling
- Research

Personal Statement

I am a senior in Mechanical and Aerospace Engineering at West Virginia University. I have always had a strong interest in space which led me towards this major, and it has not failed me yet. I previously completed an internship at Marshall Space Flight Center in the Fall of 2009 where I wrote a program to turn Ares I data into usable timeline data. Other than engineering, I enjoy running quite a bit. I ran my first ultra-marathon (50 miles) when I was 18 and have been running them since. I've also always been a very hands-on kind of guy which is why I am very excited to do NASA Academy because it is one of the best hands-on ways to become assimilated into NASA. I plan to make the most of my experience and take everything from it that I can.

West Virginia University
Morgantown, West Virginia
Chemical Engineering
Bachelors of Science, May 2013
E-mail: jyancey@mix.wvu.edu

NASA Academy Research Project:

"Development of Life Support Adsorption Technologies for Future Exploration Spacecraft"
Principal Investigator: Jim Knox

Research and Experience

- **Team Leader,** West Virginia University Entry to 2012 RASC-AL competition
  - Developed plan for Mars Mission in 2035
  - Developed novel spacecraft design
  - Performed Cost Estimation
- **Undergraduate Researcher,** NASA WVSGC Undergraduate Fellowship (Dec. 2010-Present)
  - Researching Solid State Batteries
  - Synthesize, test, and analyze solid state battery compositions
- **Worker,** *WVNano Shared Facilities* (Feb. 2010-Dec. 2010)
  - Clean, inventory, and restock rooms and equipment
  - Trained on lab equipment and techniques including: SEM, XRD,PECVD, Photolithography, E-beam Lithography, FTIR, PVD
- **Bookseller,** Borders Bookstore (May 2009-Feb.2010)
  - Provided customer service
  - Maintained Cafe
  - Re-organized store

Honors and Activities

- National Merit Commended Student
- National Honors Society
- Mountaineer Scholarship
- WV Higher Education Science, Engineering, and Technology Scholarship
- NASA Space Grant Scholar 2010-2011
- NASA Space Grant Undergraduate Fellowship 2011-2012, 2012-2013
- WVNANO Summer Undergraduate Research Symposium Winner: Nano-sciences Category
- SPACE: Co-president

Skills

- Microsoft Word, Excel, PowerPoint, Publisher
- Chemcad
- MATLAB
- Scanning Electron Microscopy, X-ray Diffraction, Physical Vapor Deposition

Hobbies and Interests

I like playing Racquetball, Ultimate Frisbee, and Soccer. I enjoy reading Science Fiction, Educational, and history books in my free time. I also enjoy working on projects, both personal and educational. I also enjoy pottery, painting, and cooking.

Personal Statement

Ever since I was a child I have been interested in building things. During the summers, my friends and I would take apart our bikes, rebuild them, and test how they performed on a track we built in the woods nearby our houses. I was always getting involved in projects, from building a paintball course to forges. My interest in building, testing, and improving naturally led me to pursue a degree in engineering. I am currently planning on pursuing a PhD upon graduation. I want to work in the aerospace industry, but my main goal is to work towards expanding human exploration of the universe.

Arkansas State University
Jonesboro, Arkansas
Electrical Engineering and Computer Science
Bachelors of Science, May 2013
E-mail: xiaobozhang@hotmail.com

NASA Academy Research Project:

"A Rocket Payload to Measure Emissions from the Solar Chromosphere"
Principal Investigator: Jonathan Cirtain

Research and Experience

- **Electrical Engineering Research Assistant,** Arkansas State University (2011)
  - Created small solar cells through chemical and electro-deposition.
  - Fabricated Cadmium Telluride, Copper Sulfide, and Indium Sulfide films.
- **Bioscience Research Assistant,** Arkansas Bioscience Institute, Arkansas State University (2010)
  - Investigated the possibility of algae as a biofuel.
  - Responsible for mixing the nutrient base for the growth of algae.
  - Carried out experiments to promote the mutation of algae through UV radiation.
- **Agricultural Research Assistant,** Syngenta Inc. (2010)
  - Tested the disease resistance of certain species of bean plants.
  - Assisted in planting and maintaining the plants involved in the experiments.
  - Involved in collecting samples and recording relevant data.

Skills

- Laboratory Experience
  - Familiar with chemical procedures and equipment.
  - Comfortable with the use of oscilloscopes, multimeters, and signal generators.
  - Ability to design and build basic circuits using a breadboard.
- Computer Skills
  - High degree of familiarity with Microsoft Office programs.
  - MATLAB and Micro-cap experience.
  - Proficient in Java and C++.

Presentations

Synthesis and Characterizations of CIS Nanocrystals for Solar Cells, Poster at Arkansas Annual NSF Conference, July 21-22, 2011, Heber Springs, Arkansas.

Fabrication of Cuprous Oxide Thin Films and Synthesis of CIS Nanocrystals for Solar Cell Applications, Presentation at NASA XXII Space Photovoltaic Research and Technology Conference, September 20-22, 2011, Cleveland, Ohio.

Hobbies and Interests

Reading, programming, playing chess and go, and watching/participating in e-sports.

Personal Statement

I have been interested in math and science since a young age, and I enjoy figuring out how and why things work. I once accidentally tased myself while attempting to dismantle the flash of a disposable camera. I was drawn to engineering and computer science because the problem solving process involved in these two disciplines fascinated me. For me, there are few things more beautiful than the code of a well-written algorithm. After graduation, I hope to attend a graduate school and pursue a Ph.D. My goal is to eventually work with either control systems or quantum computing, but I am always on the lookout for opportunities and places where circuits and algorithms overlap.

Program Director

Dr. Frank Six

Frank Six is the University Affairs Officer at MSFC. He joined Marshall in 1986 as Deputy Project Scientist for Hubble, then became assistant to the Director of the Space Science Laboratory and then deputy to the Chief Scientist. He directed the Marshall Academies in 1994, 1995 and 1996, and led all university programs from 1989 to 1996. Before coming to MSFC, Frank worked for Cornell University as assistant to the director of the Arecibo Observatory. Prior to that, he taught physics and astronomy at Western Kentucky University where he was Chairman of the Department for 17 years. Upon receiving the PhD in physics from the University of Florida, Frank joined Brown Engineering in Huntsville, Alabama working on the Apollo project. His research areas are radio astronomy and planetary magnetospheres. He is married with six children and eight grandchildren and loves to explore the coastal regions of the Gulf of Mexico.

Program Manager

Dr. Gerald R. Karr

Karr is a Professor of Mechanical and Aerospace Engineering at the University of Alabama in Huntsville. Since 1992, Dr. Karr has also served as the UAH Campus Director of the Alabama Space Grant Consortium (ASGC). Karr also served as the Chair of the Mechanical and Aerospace Engineering Department at UAH from 1986 through 1999. Since 1978, Karr has been the University Director of the highly successful NASA Summer Faculty Research Opportunity program. He has also been an active researcher in the areas of satellite drag, high-energy lasers, cryogenics, spacecraft thermal design and computational fluid mechanics. Karr earned his BS (1964), MS (1966), and PhD (1969) in Aeronautical and Astronautical Engineering at the University of Illinois at Champaign-Urbana. For recreation, Karr enjoys golf, running, sailing and visiting with his children and grandsons.

Operations Manager

Daniel Polston
daniel.polston@gmail.com

Daniel is an alumnus of the 2010 NASA Academy at MSFC. He graduated Summa Cum Laude in December 2011 from the University of Kentucky with a Bachelor of Science in Mechanical Engineering and a Minor in Mathematics. Daniel was the Operations Manager for the MSFC NASA Academy in 2011 and has also worked in the Environmental Control and Life Support Systems Branch at MSFC during the 2010 NASA Academy and 2009 NASA Undergraduate Student Research Program (USRP). Daniel is currently conducting his graduate studies at the University of Kentucky in Mechanical Engineering with a concentration in the Adaptive Control area of Systems and Design. His graduate research involves constructing and testing adaptive control algorithms, and seeks to apply similar techniques to nonholonomic systems in the future. His research in the NASA Academy and NASA USRP included regenerative activated carbon catalysts through carbon gasification and carbon dioxide reduction through the Bosch process – areas of research for oxygen-recovery technology necessary for future long-term manned exploration missions. Daniel enjoys camping, disc golfing, card games, ultimate Frisbee, listening to music, exploring, and spending time with his friends and family. Through connecting what he has always enjoyed doing – leading, designing, and creating – with a lifelong career, Daniel seeks to entertain his dream of being among the innovative leaders in our technology-driven world.

- ***NASA Academy:***
  http://www.nasa-academy.nasa.gov/
- ***NASA Academy Marshall Space Flight Center:***
  http://academy.msfc.nasa.gov/
- ***NASA Academy Alumni Association:***
  http://www.nasa-academy.org/
- ***NASA Agency:***
  http://www.nasa.gov
- ***NASA Marshall Space Flight Center:***
  http://www.msfc.nasa.gov/
- ***International Space University:***
  http://www.isunet.edu
- ***The Soffen Memorial Fund:***
  http://www.nasa-academy.org/soffen/donors.html